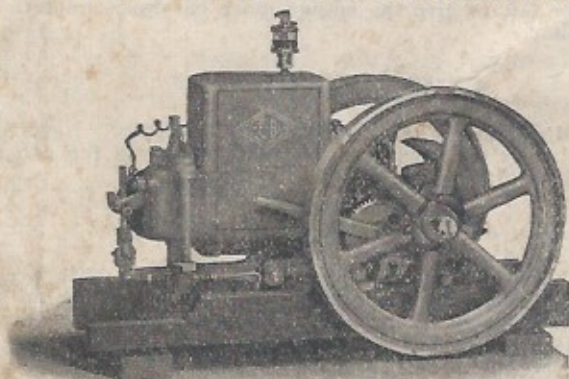


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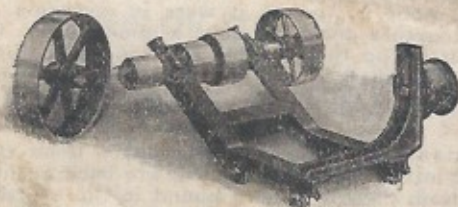
# The Line

Repair List and Instruction Book  
No. 203A

## E-B *Type H* Gas Engine E-B Line Shaft Attachment



E-B 1 1/2 H. P. Type H Gasoline Engine



E-B Line Shaft Attachment

Be Sure to Give Number of Your Engine

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**EMERSON-BRANTINGHAM IMPLEMENT COMPANY**  
(Incorporated)

Good Farm Machinery — Established 1852  
ROCKFORD, ILLINOIS, U. S. A.



## DIRECTIONS FOR STARTING ENGINE

All E-B engines have been tested and adjusted at factory and re-tested before crating. The ignition system is connected properly and should not be changed.

Attach the lubricator to pipe in hopper and fill it with gas engine oil. Fill the hopper with water. Fill the gasoline tank, straining the gasoline through silk or chamois skin. Screw down grease cups on main bearings and connecting rod about one turn. Set the lubricator to feed from eight to ten drops per minute. This lubricator is opened or closed by means of a small handle at the top. After the engine has run two or three days you can shut this lubricator down so that it feeds from five to eight drops per minute. Be sure that your engine has plenty of oil and grease. Give it too much rather than too little the first few days. Open needle valve on carburetor about one turn. Put on starting crank on governor side. Relieve the compression in the cylinder by holding the intake valve down with the left hand and turn to the right with a quick, snappy swing. After the first few turns, release the intake valve and place hand lightly over air intake on carburetor until a charge of gasoline has been sucked up from the gasoline tank. When engine starts, remove hand from carburetor and turn down needle valve until exhaust is free from black smoke. If not enough gasoline is used, the explosion will be weak or miss entirely, causing explosions in the muffler, or the engine will back fire through the mixer. If too much gasoline is used, the engine will have a black, smoky exhaust. Turn the needle valve to the left to give the engine more gasoline, and turn it to the right to shut off the gasoline.

## OIL

Use only good gas engine oil in the cylinder lubricator. Never use steam cylinder oil. If too much oil is used, white smoke will appear in the exhaust and will form soot and scale inside of cylinder.

## BOLTS AND NUTS

Examine all bolts and nuts frequently, and try them with a wrench to see that they are tight. If connecting rod or main bearings knock, take up the bearing that is loose by taking out enough liners so that when the bolts are drawn tight the shaft will be snug in its bearings and yet will run without heating.

## MAKE AND BREAK IGNITOR

The ignitor is self-contained and is fitted with composition contact points which may be renewed at any time. If ignitor is taken off and tested with wires attached, it must be snapped the same as though it were in operation on the engine. Merely touching the points together does not make a good spark. Occasionally put a drop of gas engine cylinder oil on the movable electrode stem through the hole provided in the ignitor body. The spark is made inside of the cylinder when the ignitor trips and should take place just a little before the crank comes to head dead center every other stroke.

If the spark occurs too early or before the piston is far enough back in the cylinder so that when the mixture explodes, it will fire back against the piston instead of driving the piston ahead, there will be a pound in the cylinder. This pound will be plainly distinguishable and should never occur in a properly adjusted engine when it is running at normal speed and not overloaded. On the other hand, the spark on a gas engine should be advanced as far as possible without causing this pounding. If you detect a pounding in your engine while it is running at normal speed, it shows that the spark is set too early. If, on the other hand, the engine has an extremely hot exhaust and will not cool properly, and does not develop its full power, the spark is set too late.

**TO TIME IGNITOR PROPERLY.** Turn the engine over until the crank is in proper position for firing. This position is reached when the piston is  $\frac{5}{16}$  of an inch before deadhead center. If the ignitor trips before the engine gets in this position the spark is too early. If it does not trip when the piston reaches this point, the ignition is too late. Loosen the set screw holding the trip rod in the square socketed link, No. EA-24, connecting the trip rod with exhaust lever. Back off the adjusting screw that is in the bottom of the socket until the square trip rod engages in the ignitor pawl. Now turn the adjusting screw up until the ignitor trips, and lock with the lock nut, and the trip rod with the set screw. While this is being done, be sure that the crank is still in the proper position for firing.



If, after making this adjustment, the engine still continues to pound, it is evidence that the spark is too early. Back off the adjusting screw, lowering the trip rod a trifle, and continue to do this until there is no pounding in the cylinder. On the other hand, if the engine still runs hot and you do not get the proper power, turn up the adjusting screw, making the spark earlier, being sure in doing this, that you do not get the spark too early. The engine will operate best if the spark is set as early as possible without making it pound. This applies only when the engine is operating under load.

## REPAIR SERVICE

We are anxious to give prompt, efficient and accurate repair service to our customers. You can help us to do this if you will give a little careful thought to the writing of your orders. Be sure that the serial number of your engine, together with its horse power is mentioned in each of your orders for repairs and that the parts wanted are described by number and the description in the repair list.

If your engine is a 1½ H. P. engine No. 9870 and you wish to order an exhaust valve and pin, write your order as follows:

"Ship one EA-52 Exhaust Valve and Pin for 1½ H. P. type "H" E-B Gas Engine No. 9870 by (Parcels Post, Express or Freight). Enclosed find (check, money order, or express order) for \$.....to cover price of same and transportation charges."

When you omit shipping instructions in your order, we will send the repairs by express or Parcels Post, whichever is the cheaper. Repair part prices are quoted f. o. b. factory, Rockford, Ill.

On account of our having so many small orders for repairs coming in from all parts of the country and from so many different customers, some of whom we do not know, we would much prefer to have you forward your remittance to cover the price of the repairs and transportation charges, with your order. If you send too much for transportation charges, we will see that proper return to you is made promptly. If you do not remit with your order, we will take it for granted that you are willing that your repairs be sent you C. O. D., as our being able to send them in this way will enable us to make more prompt shipment.

Give the ordering of your repairs the little attention that we ask above and we can assure you that you will receive prompt and accurate shipments. It is our desire to give this kind of service.

**BE SURE THAT YOU GIVE THE SERIAL NUMBER OF YOUR ENGINE.**  
It is found on side of hopper.

## COLD WEATHER PRECAUTIONS

If the engine gives trouble in starting in cold weather, pour a pail of hot water into hopper and let it stand for a few minutes. This will warm the cylinder and make the gasoline vaporize easier.

Always drain cylinder jacket when the engine is shut down.

## LOSS OF POWER

This may be due to several causes, among which the following are the most common:

**Ignitor Sparking Too Late.** Adjust as directed in section under "Make and Break Ignitor."

**Loss of Compression.** Due to leaky valves, caused by soot scales from inside of cylinder lodging under the valves, impurities from gasoline getting under valve and preventing it from seating properly or warped or pitted valves. Likewise, a bent valve stem or a broken valve spring will keep the valve off its seat and cause a loss of power. See section headed "Grinding Valves."

**Lack of Lubrication in the Cylinder.** Lubrication is absolutely necessary to preserve compression.

## GRINDING VALVES

When the valve or valve seat becomes burned and pitted, it will not seat properly and allows the loss of compression. This can be remedied by grinding the valve into its seat. Grinding valves on an E-B Gas engine is exceedingly simple because of the unusual construction of its valve chambers. First, remove the inlet valve cage. This is done by unscrewing the three nuts on top of the inlet "L" casting, disconnecting the gasoline feed pipe and removing this entire piece, and then the exhaust valve.

To grind in the inlet valve place the inlet "L" in a vise; remove the spring from the valve and place a small amount of carborundum valve grinding paste or paste made by mixing fine emery dust and oil together on the valve seat. Now revolve the valve back and forth on its seat either by means of a screw driver or what is still better, a screw driver bit placed in a brace. While grinding in the valve do not



If you have a fuel supply, see that the gasoline is reaching the vaporizer.

Sometimes dirt in the gasoline will get into the carburetor and obstruct the flow or dirt will get into the gasoline pipes. Clean it by taking off and blowing through it.

The one safe thing to do, is to get yourself a funnel and put over the top of it loosely a piece of chamois skin and strain all of your gasoline.

Buy the best grade of gasoline.

Sometimes water collects from condensation in the gasoline tank and may be drawn up into the pump or pipes and freeze so that no gasoline comes through.

When this happens, locate the frozen place and thaw it out with a rag dipped in warm water.

All pipes and points of the gasoline lines must be perfectly air tight; otherwise, you will not get a supply of gasoline.

Troubles in the fuel supply are easily located and you will probably have no trouble in determining what the difficulty is, if you are not getting gasoline, and remedying it.

Do not use too much gasoline, as it will reduce the power.

Use a good grade of gasoline and regulate the supply according to the work you are doing.

Three things are necessary to successful carburetion.

The fuel must be mixed with the air.

The fuel must be broken up to mix properly with the air.

The air and fuel must be mixed properly in the right proportion.

Black smoke coming from the exhaust means too much gasoline.

Fire and popping noise means not enough gasoline.

If you have a spark and gasoline, the third thing necessary is compression.

## COMPRESSION

This is largely a matter of proper lubrication, especially on a new engine, as it takes a long time to make any impression on the cylinder walls or on the piston or rings.

One of the most common causes of loss of compression is lack of lubrication.

The heat of the burning gases in the cylinder is so great that without proper lubrication on the piston and cylinder will in a few minutes become dry.

This shows itself by a peculiar hammering sound and loss of power as well as slacking in speed. If not attended to, this will soon stop the engine altogether and eventually result in serious injury to the cylinder by scoring the walls.

Not every oil will resist the action of this heat without gumming and the only oil to use is the BEST GAS ENGINE CYLINDER OIL YOU CAN PURCHASE.

DON'T USE STEAM ENGINE OIL, no matter how good, OR ORDINARY MACHINE OILS.

The ordinary machine oils are not of sufficient fire test to stand the intense heat.

Vegetable or animal oils under this great heat decompose and are turned into a substance like pitch.

REMEMBER OIL IS CHEAPER THAN MACHINERY, and the only kind of oil to use is the best you can buy.

The proper oil will lengthen the life of your engine and increase its efficiency, and cheap oil will ruin your engine.

The most accurate job of machining and fitting of the cylinder, piston and rings will not hold the pressure of the explosion without a film of good gas engine oil between the piston and cylinder walls.

After lubrication, the next most common cause of lack of compression is leaky valves; that is, valves that do not fit tight, and worn or broken piston rings—the latter will not apply however on a new engine.

A good way to test for leaky valve is to bring the piston slowly up against compression.

If they are tight it is almost impossible to turn it over this slow, but if there is a gradual letting up of compression it is a pretty sure indication of leaking valves.

They should then be ground, using a good grinding compound, of which there are several on the market.

If the valves are right and the engine is properly lubricated, the piston should be taken out and the piston rings examined.

They may be worn so that they do not fit tight against the cylinder walls, or a ring may be broken.

If smoke from the exhaust is noticeable in the crank case it is almost certain the piston rings do not fit tight.

Take out your ignitor once a month and clean it with a tooth brush and gasoline.



## SUMMARY

If you have compression, a spark and gasoline, and nothing on your engine is broken or missing, your engine is bound to run.

Don't forget that 99 times out of 100 when your engine will not run, you are at fault and not the engine.

Take your time, look around and see what you have forgotten.

Don't be afraid to try to fix your engine, and don't send for an expert until you have exhausted every means at your command to locate the trouble—then call in the services of someone whom you think understands engines better than you do.

A gas engine is something that will last a great many years if properly taken care of—and something that can be ruined in a short time, if not properly taken care of.

When you get your engine, supply yourself with the following articles:

An extra set of batteries.

A supply of No. 1 gas engine cylinder oil.

A funnel with a piece of chamois skin over it.

A good book on the subject of gas engines, their constructions and care, of which there are a great many on the market, and they can be had for from 75 cents to \$2.00.

You will find after looking through the book occasionally when you have spare time that you will soon become a thorough master of your engine and your engine troubles will vanish.

Don't forget to turn off the gasoline and lubricating oil when through running engine.

Don't forget to draw water out of hopper in freezing weather.

Don't wipe the engine while it is in motion.

Don't get excited and condemn engine and wire for an expert. Go slow and you will find the trouble, and remember, 98 per cent of all gas engine troubles come under the headings mentioned above, viz.:

FUEL SUPPLY, IGNITION and COMPRESSION.

Forget the other two per cent, and if you cannot remedy the troubles, report the matter to us or your dealer, giving all the details you can and saying where you think the trouble is, and 99 times out of 100 we can tell you how to remedy them, thus saving you time and ourselves unnecessary expense.

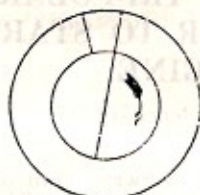
## ROTARY MAGNETO INSTRUCTIONS

Turn the engine in the direction in which it should run until the piston reaches that position where the spark should occur. The engine manufacturers' instruction book should give this information. Then adjust the ignitor operating mechanism so that the ignitor trips when the piston is in the required position. After this has been adjusted, carefully set the engine in that position where the ignitor snaps. Slowly rotate the magneto gear in the direction in which it runs until the line on the end of the shaft is coincident with the line on the end of the bearing. If the rotation of the magneto, when looking at the terminal end, is right hand, see Fig. 1, the marks should line up as shown. If the rotation is left hand, see Fig. 2.

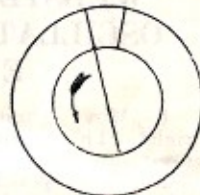
**SECURE THE GEAR:** After the magneto has been properly timed, it is necessary to secure the gear on the magneto shaft against any possibility of slipping. The magneto shaft is provided with Woodruff key and the gear is held on the shaft by means of a lock washer and nut. The keys should be in place and the nut should be tightened up.

When the magneto has once been timed to the engine, two of the teeth on the drive gear should be marked with a chisel or prick punch. Then the tooth on the magneto gear which meshes between these two teeth should also be marked. Then if for any reason the magneto is removed from the engine, it can be replaced in exactly its former position.

**OCCASIONAL READJUSTMENT OF TIMING:** When the ignitor has been timed to the engine and the magneto to the ignitor, the relation between the magneto and the engine CANNOT VARY. Wear of the ignitor parts and actuating mechanism cause it to get out of time with the engine and the magneto. Since the relation between the magneto and the engine does not change, once it is established, it is necessary to occasionally readjust the ignitor and its operating mechanism, to keep the three in time, the magneto, the ignitor, the engine.



**Figure 1**  
Right Hand Rotation when looking at the terminal end. The marks are on the end of the shaft and bearing.



**Figure 2**  
Left Hand Rotation when looking at the terminal end. The marks are on the end of the shaft and bearing. Used on E.B. Engines.



**CARE OF ENGINE IGNITOR:** Keep the contact points clean and smooth, renewing them when necessary. See that the points touch together firmly when the ignitor closes and then open quickly at the firing instant. Oil the moving parts of the ignitor sparingly. See that all moving parts work freely. Keep the carbon cleaned from the inner end of the ignitor, especially around the insulated electrode. Keep grease and dirt off the Mica insulating washers on the outside end of the insulated electrode. Keep the ignitor operating mechanism so adjusted that the contact points come together at least one-sixth of a fly-wheel revolution, if possible, before they snap apart. This is important.

**FAILURE OF IGNITOR INSULATOR:** The failure of ignitor insulation is first indicated by the engine being difficult to start or by missing after the engine has been running. Frequently if a battery is substituted for the magneto, the engine will operate satisfactorily for a day or two longer because the low voltage battery current does not leak through broken down insulation as readily as the higher voltage magneto current. Whenever the insulation failure occurs, the Mica around the stationary electrode should be renewed or a standard N. G. E. A. electrode should be inserted. We can supply various sizes of these electrodes.

**OILING:** A light grade of oil such as "3 in 1," cream separator oil, or sewing machine oil is recommended. Place two drops of good light oil in each of the cups every ten hours of actual operation. Do not flood the magneto with oil and do not allow it to run dry.

**TO START ENGINE ON COMPRESSION:** If it is desired to start the engine by pulling it backwards against compression, the magneto must be driven at twice engine speed and necessary means for tripping the ignitor in proper time with the magneto must be provided. This all enters into the design of the engine.

**WARNING:** IF FOR ANY REASON A BATTERY IS CONNECTED TO AN ENGINE ON WHICH THERE IS A MAGNETO THE WIRE FROM THE MAGNETO TO THE IGNITOR MUST FIRST BE DETACHED.

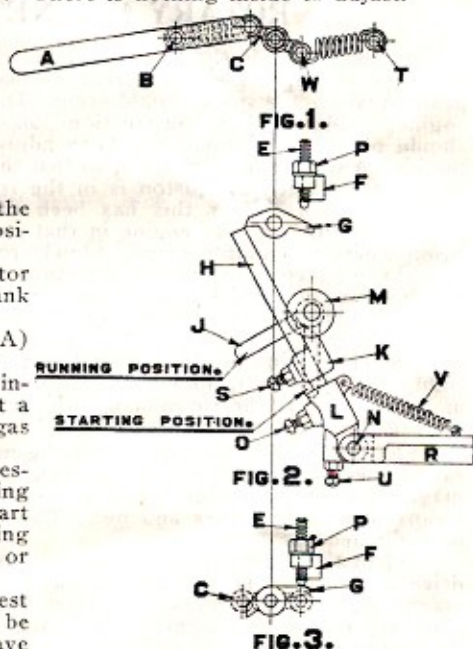
Magnets must not be taken from the magneto unless a keeper consisting of a bar of iron with cross section as large as the magnet itself is put across from one leg of the magnet to the other to conduct the magnetic lines of force. The armature should never be removed from a magneto unless the space from which it is withdrawn is filled with pieces of iron.

**DO NOT TAKE MAGNETO APART.** There is nothing inside to adjust.

## INSTRUCTIONS FOR USING WEBSTER TRI-POLAR OSCILLATOR TO START ENGINE

1. Move timing lever (J, fig. 2) to the right. This is the retarded or starting position.
2. Turn fly wheels forward until oscillator trips, and stop in this position. The crank should now be on dead center.
3. Cock oscillator with starting lever (A) as in (fig. 1.)
4. Open needle valve. Hold hand over intake pipe and turn fly wheel forward about a quarter of a revolution to draw charge of gas into cylinder.
5. Pull fly wheels back against compression and trip oscillator quickly by pressing down on starting lever (A). This will start engine. After a few explosions, move timing lever (J) to the left. This is the advanced or running position.
6. Adjust needle valve of mixer until best results are obtained. Small engines may be started by cranking, care being taken to have timing lever (J) in retarded position.

In case bracket is equipped with a priming cup, starting can be made as follows: Carry out directions (1, 2 and 3). Open needle valve as in (4). Fill priming cup with gasoline. Turn fly wheel forward about one-fourth of a revolution and open priming cup valve quickly so that fuel is drawn in by suction. By carrying out direction (5) the engine will start.





## TO TEST FOR SPARK

**Important:** Remove oscillator and bracket from engine and trip oscillator with starting lever (A). If a weak spark or no spark occurs at the points there are but three reasons for it.

No. 1. The adjustment of screw (E) in the electrode arm (F) may not be correct. The correct position of screw (E) is when it just touches the tail of push finger (G) when the spring arm (C) is in a horizontal position as in (fig. 3.) Always be sure to tighten lock nut. With the screw (E) in this position the points will always be together and a maximum spark will always be obtained. As the points wear down the screw (E) must be adjusted.

No. 2. The connections between oscillator and stationary or insulated electrode on ignitor plug may be short-circuited. By this meant the brass terminal on the electrode and the wire running from oscillator to it. Care must be taken not to bend this brass terminal or connecting wire from oscillator to terminal in such way that either will touch any part of bracket or oscillator, as this will cause a short-circuit and no spark will occur at the points. The wire may also be broken. This can be easily replaced by removing cover which is under magnets. Use good wire.

No. 3. The insulation on the stationary electrode may be dirty or broken down, in which case the insulation must be renewed or cleaned.

## TO ADJUST AND TIME THE WEBSTER OSCILLATOR

1. Place engine crank in firing position. To do this, set engine crank 8 degrees below inner dead center on compression stroke, for every 100 revolutions per minute of the engine.

2. Move timing lever (J) to left, or advanced position. Place starting lever (A) on long spring stud and cock oscillator as in (fig. 1.)

3. Adjust length of push rod (H) in journal (L) by set screw (U) until end of push rod just touches tip up of push finger (G). Tighten set screw (O) also lock nuts on both (O) and (U).

4. Adjust wedge (K) until inner edge of push rod (H) just clears push finger (G). Tighten set screw (S) and lock nut.

5. Remove starting lever (A) and attach oscillator terminal wire to insulated electrode. Turn engine over slowly, and if properly timed, oscillator will trip off at firing position. To make engine fire earlier, move wedge toward oscillator and in the opposite direction to make it fire later.

6. Starting lever (A) is a gage to determine the angle to which the oscillator should always be cocked as in (fig. ). Be sure that the push rod (H) operates the oscillator to this angle when timing lever (J) is in running position as shown in (fig. 2).

## CARE OF OSCILLATOR

**OIL FREQUENTLY** the two main bearings of the oscillator, the trip roller and the movable electrode. Use a good quality of oil. Avoid the use of heavy oil. In cold weather use very light oil, and if the electrode and main bearings have a tendency to stick, wash them out with a few drops of kerosene.

Ignitor points may be cleaned without removing bracket from engine by sliding movable electrode back and forth from the outside.

**NEVER REMOVE THE MAGNETS**, as they will immediately lose much of their strength.

**NEVER TAKE THE OSCILLATOR APART.** It contains absolutely no brushes or rubbing contacts of any kind. Dismantling can result only in derangement of the machine and permanent injury thereto.

Oil the four spring roller pins (T) and (W) (fig. 1), and clean dust off daily.

Be sure to give serial number of your engine, and also give information as to kind of ignitor, battery, Sumter magneto or Webster magneto.



# 1½ H. P. Type H Repair List

Code	Part No.	Price	Description	Size	Weight
Nxu.....	EH-1	18.65	Cylinder .....		77 lbs.
Nxv.....	EH-2	1.65	Rocker Arm .....		4 lbs. 6 oz.
Nxw.....	EH-3	.40	Main Bearing Bushing, R. H. ....		6 oz.
Nxx.....	EH-4	.40	Main Bearing Bushing, L. H. ....		6 oz.
Nxy.....	EH-6	1.55	Intake Ell .....		2 lbs.
Nxz.....	EH-7	3.35	Piston .....		3½ lbs.
Nya.....	EH-9	8.00	Fly Wheel (Pulley side) .....		47½ lbs.
Nanr.....	EA-9F	12.35	Fly Wheel (Gear side) .....		48½ lbs.
Nag.....	EA-12	.35	Con. Rod Cap .....		10 oz.
Nans.....	EH-13	.25	Detent .....		
Nant.....	EH-14	1.25	Cam Gear .....		2½ lbs.
Nyc.....	EH-15	.60	Magneto Bracket .....		1 lbs.
Nyd.....	EH-16	.60	Oil Shield .....		4 lbs.
Nye.....	EH-17	.25	Valve Guide .....		7 oz.
Nai.....	EA-18	.35	Governor Bracket .....		½ lbs.
Naj.....	EA-19	.40	Governor Weights .....		
Nyl.....	EH-21	.35	Main Bearing Cap .....		1¼ lbs.
Nyg.....	EH-22	.35	Speed Lever .....		1 lbs.
Nam.....	EA-23	.40	Starting Crank .....		1½ lbs.
Nan.....	EA-24	.20	Trip Rod Con. Link .....		5½ oz.
Nas.....	EA-25F	.60	Piston Ring .....		3 oz.
Nap.....	EA-26J	.55	Mixer .....		14 oz.
Nyh.....	EH-27	.80	Magneto Pinion .....		5 oz.
Nar.....	EA-28	.55	Muffler Base .....		3 lbs.
Nas.....	EA-29	.55	Muffler Cap .....		4 lbs.
Nyi.....	EH-30	6.00	Crankshaft .....		10 lbs.
Nau.....	EA-31	.75	Crankshaft Pinion .....		¾ lbs.
Nyj.....	EH-32	.20	Cam Gear Stud .....		10 oz.
Nyk.....	EH-33	.65	Con. Rod Bushing .....		4 oz.
Nyl.....	EH-34	.10	Intake Valve Spring .....		¼ oz.
Nym.....	EH-35	.05	Main Bearing Liners (per set) .....		½ oz.
Nyn.....	EH-36	.40	Detent Pawl .....		¾ oz.
Nyo.....	EH-37	.45	Catch Block .....		½ oz.
Nax.....	EA-38	.20	Cam Roller .....		4 oz.
Nyp.....	EH-39	.15	Detent Pin .....		1 oz.
Nyq.....	EH-40	.15	Cam Roller Pin .....		1 oz.
Nyr.....	EH-41	.80	Intake Valve .....		4 oz.
Naz.....	EA-42	.20	Rocker Arm Pin .....		1 lb.
Nanu.....	EH-43	.20	Detent Stop Stud .....		
Nanv.....	EH-44	.40	Magneto Trip Rod .....		3½ oz.
Nanw.....	EH-46	.40	Ignitor Trip Rod .....		3½ oz.
Nyt.....	EH-48	.25	Intake Ell Stud .....		10 oz.
Nyu.....	EH-49	.10	Fly Wheel Key .....		2 oz.
Nyv.....	EH-50	.15	Mixer Tubing .....		½ oz.
Nbf.....	EA-51	.55	Movable Electrode .....		4 oz.
Nbg.....	EA-52	.85	Exhaust Valve .....		5 oz.
Nbh.....	EA-53	.20	Rocker Arm Adj. Screw .....		2 oz.
Nyw.....	EH-54	.10	Crank Shaft Pinion Key .....		1 oz.
Nbi.....	EA-55	.20	Trip Rod Pin .....		0.1 oz.
Nbi.....	EA-55	.20	Intermediate Link Pin .....		0.1 oz.
Nbj.....	EA-56	.15	Governor Spring Screw .....		½ oz.
Nyx.....	EH-57	2.80	Gasoline Tank .....		3¾ lbs.
Nbk.....	EA-58	.10	Exhaust Spring Collar .....		1 oz.
Nbl.....	EA-59G	.35	Needle Valve .....		1¼ oz.
Nbt.....	EA-74	.15	Ignitor Gasket .....		0.1 oz.
Nbu.....	EA-75	.15	Electrode Mica Bushing .....		0.1 oz.
Nbv.....	EA-77	1.35	Skids (Complete) .....		15 lbs.
Nanx.....	EH-78	1.35	Skids (Complete) (Web. Mag.) .....		15 lbs.
Nbw.....	EA-80	.15	Con. Rod Liners (per set) .....		¼ oz.
Nbx.....	EA-81	.20	Stationary Electrode .....		1 oz.
Nby.....	EA-82	.75	Ignitor Pawl .....		2 oz.
Nca.....	EA-84	.15	Ignitor Safety Spring .....		½ oz.
Ncb.....	EA-86	.06	Ignitor Plunger .....		½ oz.
Ncd.....	EA-88	.15	Intake Ell Gasket .....		0.1 oz.
Ncg.....	EA-91	.35	Fly Wheel Key .....		3 oz.
Nch.....	EA-92	.20	Piston Pin .....		12 oz.



# 1½ H. P. Type H Repair List

Nej	EA-95F	.35	Ignitor Points		0.1 oz.
Ncm	EA-100F	.15	Needle Valve Tension Spring		0.1 oz.
Ncn	EA-101	.15	Exhaust Valve Spring		1 oz.
Nco	EA-103	.60	Mixer Check Valve		1 oz.
Ncp	EA-104	.15	Governor Weight Springs		5 oz.
Nyy	EH-109	2.20	Governor Spool		1 lb. 3 oz.
Nyz	EH-110	.65	Governor Roller Arm		10½ oz.
Nza	EH-111	.25	Detent		7 oz.
Nzb	EH-112	.85	Governor Roller		4 oz.
Nzc	EH-113	.10	Governor Roller Pin		½ oz.
Nzd	EH-114	.25	Governor Roller Arm Stud		2 oz.
Ncz	EA-126	Per set .07	Ignitor Mica Washer, inside		½ oz.
Nda	EA-127	Per set .07	Ignitor Mica Washer, outside		½ oz.
Nde	EA-131	1.00	Ignitor Body		1¼ lbs.
Nev	EA-219	.15	Ignitor Tension Spring		0.3 oz.
New	EA-220	.20	Ignitor Torsion Spring		¼ oz.
Ney	EA-222	.15	Governor Weight Pin		1 oz.
Nez	EA-223	.15	Trip Rod Spring		1 oz.
Nez	EA-223	.15	Rocker Arm Spring		1 oz.
Nfa	EA-240	.20	Intermediate Link		4½ oz.
Nany	EA-297	.04	Magneto Wedge Plate		1½ oz.
Niz	EA-1216	.15	Detent Spring		½ oz.
Nze	EH-300	Per doz. .03	Exhaust Spring Collar Pin	¾" x ¾" Cotter	1 oz.
Nzf	EH-301	.03	Intake Ell Stud Nuts	¾" Hex. Full	½ oz.
Nzg	EH-302	.03	Water Drain Plug	¾" Std.	1 oz.
Nzh	EH-304	Per doz. .03	Rocker Arm Spring Pin	¾" x ½" Rivet	¼ oz.
Nzi	EH-305	.03	Detent Spring Pin	¾" x ½" Rivet	¼ oz.
Nzj	EH-306	.05	Detent Stop Stud Nut	¾" Hex. Jam	¼ oz.
Nzk	EH-307	.25	Lubricator Nipple	¾" x 7/8"	5 oz.
Nzl	EH-308	.10	Lubricator Coupling	¾" Std.	1½ oz.
Nzm	EH-309	Per doz. .03	Intake Valve Pin	¾" x ¾" Cotter	1 oz.
Nzn	EH-310	.25	Intake Ell Nipple	¾" x 7"	9 oz.
Nzo	EH-311	.25	Imperial Brass Coupling	¾" x 1½" Sh.	½ oz.
Nzp	EH-312	Per doz. .03	Cam Roller Pin Cotter	¾" x 1" Cotter	1 oz.
Nzq	EH-313	.05	Catch Block Screw	¾" x ¾" Hex. Hd.	½ oz.
Nzr	EH-314	.03	Catch Block Spring Washer	¾" Spring	0.1 oz.
Nzs	EH-315	.03	Trip Rod Set Screw	¾" x 1" Sq. Hd.	½ oz.
Nzt	EH-316	.05	Rocker Arm Adj. Screw Nut	¾" Hex. Jam.	½ oz.
Nzu	EH-317	.03	Con. Link Pin Cotter	¾" x ¾" Cotter	½ oz.
Nzv	EH-318	Per doz. .03	Intermediate Link Pin Cotter	¾" x ¾" Cotter	½ oz.
Nzw	EH-319	Per doz. .03	Trip Rod Set Screw Nut	¾" x Hex. Jam	¼ oz.
Nzx	EH-320	.05	Trip Rod Adj. Screw	¾" x 1½" Set Sc.	½ oz.
Nzy	EH-321	.07	Trip Rod Adj. Screw Nut	¾" Hex. Jam	¼ oz.
Nzz	EH-322	.05	Governor Spring Screw Nut	¾" Hex. Jam	¼ oz.
Naaa	EH-323	.10	Fly Wheel Bolt	¾" x 4½" Mach.	6 oz.
Naab	EH-324	.07	Governor Bracket Screws	¾" x 1¼" Hex. Hd.	1 oz.
Naac	EH-325	Per doz. .03	Governor Weight Pin Cotter	¾" x 1¼" Cotter	¾ oz.
Naad	EH-326	Per doz. .03	Governor Spool Pin	¾" x 5/8" Long	1 oz.
Naaf	EH-327	Per doz. .03	Governor Roller Pin Cotter	¾" x 1" Cotter	½ oz.
Naag	EH-328	.40	Con. Rod Bearing Babbitt	Grade E	13½ oz.
Naah	EH-329	.03	Piston Set Screw	¾" x 1" Sq. Hd.	1 oz.
Naai	EH-330	.03	Piston Set Screw Nut	¾" Hex. Jam	½ oz.
Naaj	EH-332	.07	Wrist Pin Bushing Screw	No. 14-20 7/16 Ft. Hd.	¼ oz.
Nanz	EH-333	.05	Con. Rod Cap Screws	¾" x 2½" Hex. Hd.	1½ oz.
Naak	EH-334	.03	Stationary Electrode Washer	¾" Hex. Full	½ oz.
Naal	EH-335	.10	Electrode Binding Post	¾" x 5/16", No. 16 Ga.	¼ oz.
Naam	EH-336	.03	Stationary Electrode Nut	No. 24 Spr. Clip	½ oz.
Naan	EH-337	Per doz. .03	Movable Electrode Cotter	¾" Hex. Jam	¼ oz.
Naao	EH-338	.03	Ground Wire Screw	¾" x ¾"	½ oz.
Naap	EH-339	.03	Ignitor Body Pin	8-32 ¾" Rd. Hd.	0.5 oz.
Naq	EH-340	.03	Ignitor Tension Spring Pin	No. 2x1 Taper	0.2 oz.
Naar	EH-341	.03	Movable Electrode Pin	¾" x ½" Rivet	¼ oz.
Naas	EH-342	2.30	Cylinder Lubricator	No. 1x1¼" Long	¾ oz.
Naat	EH-343	.07	Detent Pawl Clamp Screw	1½ oz. ¼" Sh.	10 oz.
Naau	EH-344	.03	Detent Pawl Screw Washer	¾" x 1¼" Ft. Hd.	¼ oz.
				¾" x 17/64" x No. 18	0.2 oz.



# 1½ H. P. Type H Repair List

Naav.....	EH-345	.03	Detent Pawl Screw Washer .....	¼" Spr.	0.1 oz.
Naaw.....	EH-346	.03	Detent Pawl Adj. Screw .....	¼"x1½" Set Sc.	0.4 oz.
Naax.....	EH-347	.03	Detent Pawl Adj. Screw Nut .....	¼" Hex. Jam	¼ oz.
Naay.....	EH-348	Per doz. .03	Detent Pin Cotter .....	¾"x1" Cotter	½ oz.
Naaz.....	EH-349	.07	Main Bearing Cap Screw .....	½"x1½" Hex. Hd.	2½ oz.
Naba.....	EH-350	.03	Main Bearing Cap Screw Washer .....	½" Spring	¼ oz.
Nabb.....	EH-351	10.00	Magneto No. 11 Sumter .....	¼"x4" Stove	5¼ lbs.
Nabc.....	EH-352	.04	Muffler Bolts .....	1½"x2½"	1 oz.
Nabd.....	EH-353	.15	Muffler Nipple .....	¾"x¾"	3 oz.
Nabf.....	EH-354	.03	Pulley Set Screws .....	¾"x¾"	1½ oz.
Nabg.....	EH-355	.07	Oil Shield Bolts .....	¾"x1½" Mach.	1 oz.
Nabh.....	EH-356	Per doz. .03	Cam Gear Stud Pin .....	¾"x1" Cotter	1 oz.
Nabi.....	EH-357	.03	Cam Gear Stud Washer .....	1¼"x1½" No. 16 G.	¼ oz.
Nabj.....	EH-358	Per doz. .03	Rocker Arm Pin Cotter .....	¾"x1" Cotter	2 oz.
Nabk.....	EH-359	.03	Rocker Arm Pin Washer .....	1¼"x1½" No. 16 G.	¼ oz.
Nabl.....	EH-360	.05	Rocker Arm Pin Screw .....	¾"x¾" Set	½ oz.
Nabm.....	EH-361	.20	Main Bearing Grease Cup .....	No. 0-¾" Pl.	2 oz.
Nabe.....	EA-361	26.65	Webster Magneto Comp. ....	K-128	11½ lbs.
Nhy.....	EA-362	8.00	Webster Magneto Bracket .....	K-128	4¼ lbs.
Nabn.....	EH-362	.25	Con. Rod Grease Cup .....	No. 00-¾" Ratchet	2 oz.
Nhz.....	EA-363	.40	Wedge For ¾" Trip Rod .....	¾"x1" L. H. Set	½ oz.
Nabo.....	EH-363	.07	Cam Gear Stud Screw .....	¾"x1" Hex. Hd.	1 oz.
Nabp.....	EH-364	.07	Mag. Bracket Screws .....	¾"x1½" Hex. Hd.	1 oz.
Nabq.....	EH-365	.07	Ignitor Screws .....	¾"x1" Cotter	½ oz.
Nabr.....	EH-367	Per doz. .03	Ignitor Safety Spring Pin .....	¾" Spring	0.1 oz.
Nabs.....	EH-368	.03	Magneto Bracket Spring Washer .....	¾" Hex. Jam	½ oz.
Nabt.....	EH-369	.05	Governor Roller Arm Stud Nut .....	¾"x7/16" No. 16 G.	¼ oz.
Nabu.....	EH-370	.03	Governor Roller Arm Stud Washer .....	¾"x¾" Hex. Hd.	½ oz.
Nabv.....	EH-371	Per doz. .03	Governor Roller Arm Stud Pin .....	¾"x2" Galv.	1 oz.
Nabw.....	EH-372	.07	Magneto Screws .....	¾" Galv.	3 oz.
Nabx.....	EH-374	.15	Gas Tank Nipple .....	¾" Std.	1 oz.
Naby.....	EH-375	.15	Gas Tank Tee .....	¾" Gun Metal	½ oz.
Nabz.....	EH-376	.07	Gas Tank Drain Plug .....	No. 14x1" R. H.N. S.	¼ oz.
Naca.....	EH-377	.04	Mixer Check Valve Ball .....	1½" and 1½"	1 oz.
Nach.....	EH-379	.04	Gas Tank Screws .....	1½"x9/16"	4½ oz.
Nacd.....	EH-382	.20	Wrench .....	1½"x9/16"	2 oz.
Nace.....	EH-383	.15	Wrench .....	1½"x9/16"	1 oz.
Nacf.....	EH-384	.15	Wrench .....	1½"x9/16"	4½ oz.
Nacg.....	EH-385	.07	Engine to Skid Screws .....	¾"x3" Lag.	2 oz.
Nach.....	EH-386	.25	Oil Can, Bent Spout .....	1 pt.	1 oz.
Naci.....	EH-389	.10	Coupling Reducer Nipple .....	¾" Close	3 oz.
Nacj.....	EH-390	.15	I. B. Coupling Reducer .....	¾"x¾"	¼ lb.
Nbsn.....	EB-390	.10	Trip Rod Spacing Sleeve .....	¾"x¾"	1 oz.
Nack.....	EH-391	.25	Imperial Brass Coupling .....	No. 68 F, ¼"x¼"	3 oz.
Nbvg.....	EH-397	.05	Detent Pawl Clamp Screw Nut .....	¼" Hex. Jam	1½ oz.
Nbvh.....	EH-398	.05	Cam Gear Stud Screw Nut .....	¾" Hex. Jam	¼ oz.
Nbvi.....	EH-399	.07	Wedge Adj. Screw .....	¾"x1½" Sq. Hd.	½ oz.
Nbvj.....	EH-400	.05	Wedge Adj. Screw Nut .....	¼" Hex. Jam	¼ oz.

## Pulleys

Nbvk.....	EH-20	2.35	Pulley .....	4"x4"	7¼ lbs.
Nys.....	EH-47	4.00	Pulley .....	6"x6"	14 lbs.
Nbvl.....	EH-63	4.35	Pulley .....	8"x4"	12 lbs.
Nbvm.....	EH-120	3.00	Pulley .....	6"x4"	10 lbs.



## 1½ H. P. Type H Repair List

### Complete Units

Nbvn.....	EH-392	22.00	Cylinder .....		80½ lbs.
Nbvo.....	EH-393	3.00	Intake Ell .....		2¼ lbs.
Nbvp.....	EH-394	4.55	Piston with Rings .....		4 lbs.
Nbvq.....	EH-395	4.00	Con. Rod .....		3½ lbs.
Ndm.....	EA-142	4.55	Ignitor .....		2 lbs.
Nbvr.....	EH-396	1.20	Muffler .....		6¼ lbs.
Ndr.....	EA-148	1.35	Mixer .....		1¼ lbs.

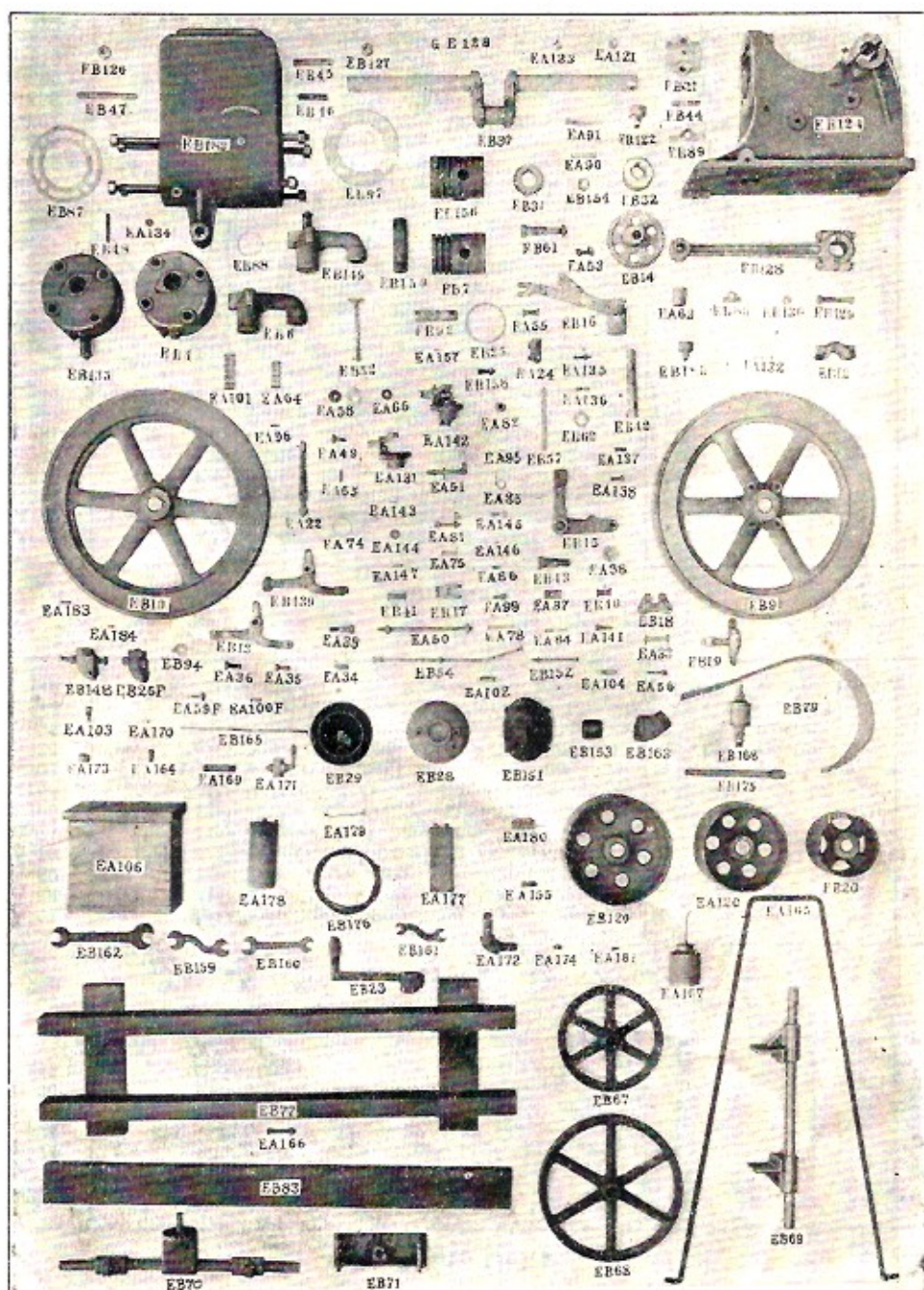
### Truck

Nbvw.....	EA-67	1.00	Truck Wheel (Front) .....		7 lbs.
Nbp.....	EA-68	2.00	Rear Truck Wheel .....		12 lbs.
Nbq.....	EA-69	1.35	Rear Axle Casting .....		8 lbs.
Nbr.....	EA-70	2.00	Front Axle Casting .....		12 lbs.
Nbs.....	EA-71	1.00	Bolster Plate .....		5 lbs.
Ncq.....	EA-105	1.00	Truck Handle .....		5½ lbs.
Neh.....	EA-166	.03	Bolster Bolt .....	¾" x 2½"	2 oz.
Nfz.....	EA-303	.03	Rear Axle Bolt .....	¾" x 2½"	2 oz.
Ngu.....	EA-324	.03	Axle Pins .....	¾" x 1½" Cotter	2½ oz.
Ngv.....	EA-325	.03	King Bolt Pins .....	¾" x 1½" Cotter	1¼ oz.
Nhq.....	EA-346	.03	Rear Axle Bolt Washer .....	1" x 7/16" x No. 16 G.	¾ oz.
Nht.....	EA-349	.03	Axle Washer .....	1¼" x 1½" x No. 16 G.	¾ oz.

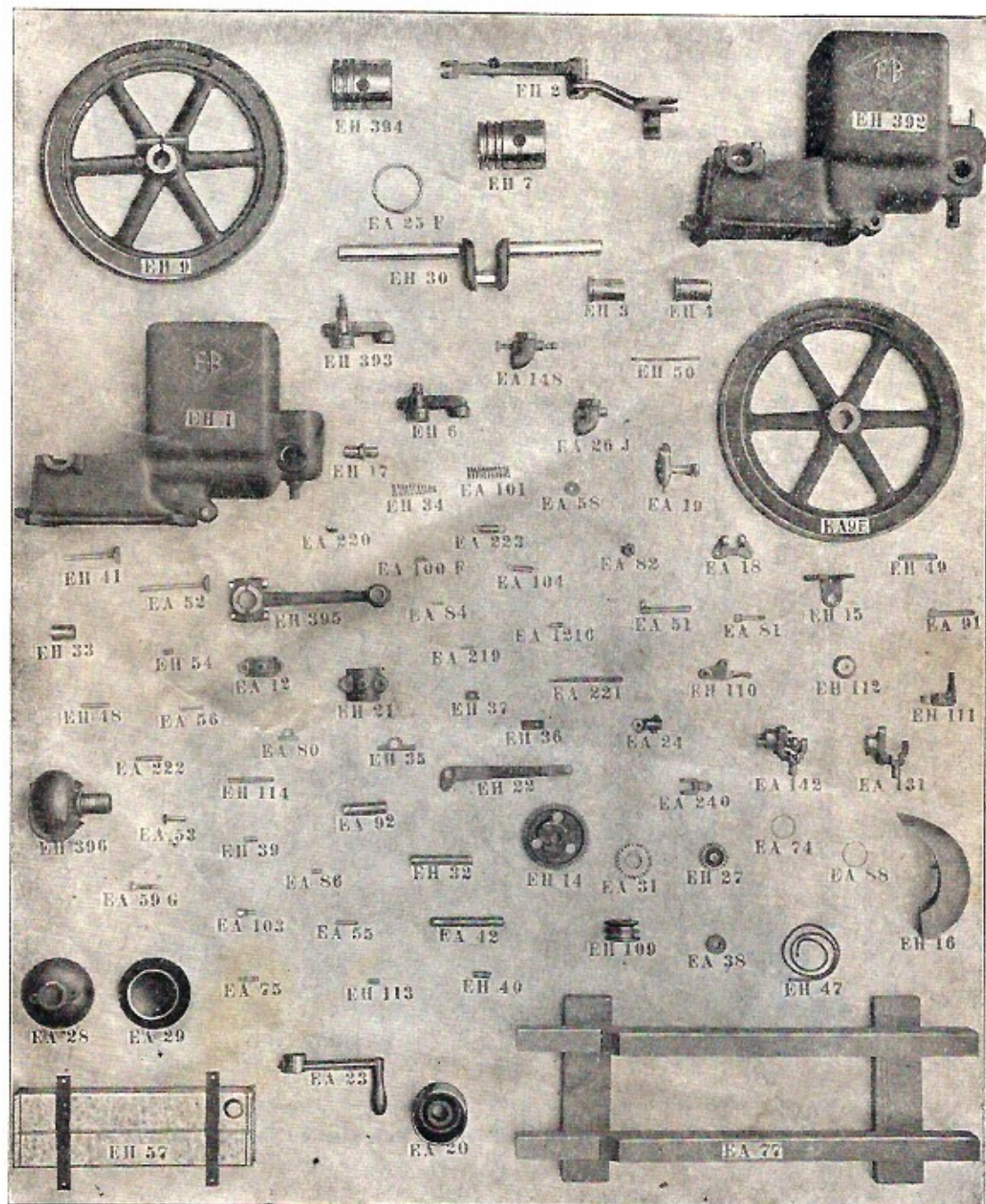
### Lineshaft

Nal.....	EA-21	.55	Countershaft Bearing Cap .....		1½ lbs.
Nce.....	EA-89	Per set .15	Countershaft Bearing Liners .....	Per Set	¾ oz.
Nfn.....	EA-278	4.95	Countershaft Bracket .....		28 lbs.
Nfo.....	EA-279	1.45	Pulley .....	3"	2¼ lbs.
Nfp.....	EA-280	1.85	Pulley .....	4"	4½ lbs.
Nfq.....	EA-281	2.05	Pulley .....	5"	4½ lbs.
Nfr.....	EA-282	2.80	Pulley .....	8"	10½ lbs.
Nfs.....	EA-283	4.10	Pulley .....	12"	16 lbs.
Nft.....	EA-284	1.55	Countershaft .....		7½ lbs.
Nfu.....	EA-285	.60	Idler Sleeve .....		18 oz.
Nfv.....	EA-286	.15	Countershaft Spacing Sleeve .....		9 oz.
Nfw.....	EA-287	.15	Countershaft Pins .....		1½ oz.
Nfx.....	EA-288	2.20	Idler Pulley .....		6 lbs.
Nim.....	EA-600	.20	Main Bearing Grease Cup .....	No. 0-¾"	2 oz.
Nin.....	EA-601	.07	Bearing Cap Screw .....	½" x 1½" Hex. Hd.	3 oz.
Nio.....	EA-602	.03	Bearing Cap Screw Washer .....	½" Spring	½ oz.
Nip.....	EA-603	1.95	Bearing Babbitt .....	Grade E	3 lbs.
Niq.....	EA-604	.05	Pulley Set Screw for 3" Pulley .....	¾" x 1" Hdless.	¾ oz.
Nir.....	EA-605	.05	Pulley Set Screw .....	¾" x 1" Sq. Hd.	1 oz.
Nis.....	EA-606	.03	Countershaft Pin Cotter .....	¾" x ¾"	½ oz.
Nit.....	EA-607	.07	Bracket Bolts for W. Beams .....	¾" x 2½" Cge.	2 oz.
Niu.....	EA-608	.03	Bracket Bolt Washer .....	1" x 7/16" x No. 16 G.	¾ oz.
Niv.....	EA-609	.07	Bracket Bolts for Steel Beams .....	¾" x 1½" Mach.	2 oz.
Niw.....	EA-610	.07	Idler Pulley Bolt .....	¾" x 5½" Mach.	7 oz.
Nix.....	EA-611	.03	Idler Pulley Bolt Washer .....	1½" x 1½" x No. 16 G.	¾ oz.
Niy.....	EA-612	9.35	Bracket Complete, Caps, Cap Screws, Washers, Liners and Babbitted .....		33½ lbs.











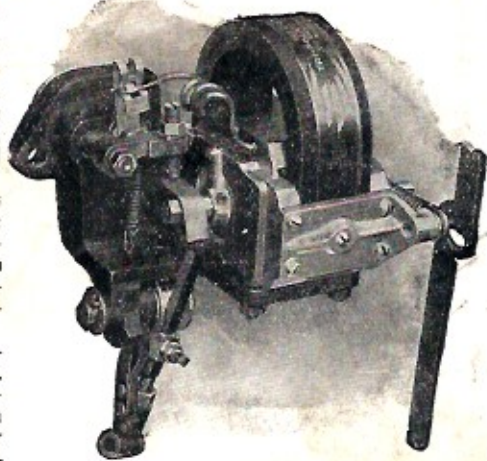
The Webster Tripolar Magneto has no moving wires, brushes or collector rings and is guaranteed to be absolutely weather, water and oil proof.

Another important feature is its few wearing parts, the entire magneto remaining idle except the instant when the spark is required to ignite the charge. The Webster does not revolve, but merely oscillates through a small angle.

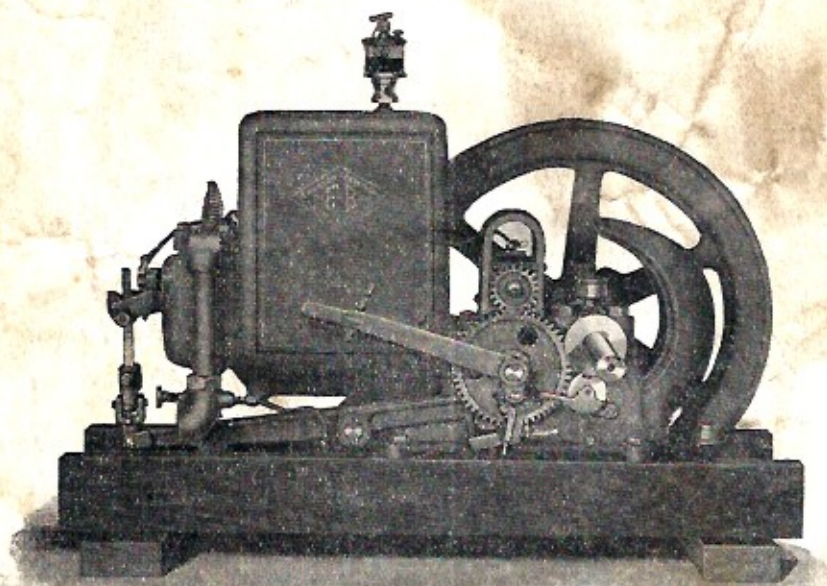
It is attached to the engine by means of a bracket which is made a part of the ignitor plug. The arrangement is patented and gives many advantages, such as uniform timing, a feature never attained before in a magneto for gas engine work.

When the magneto is not in operation, the spark points are always closed, thus assuring a perfect contact and preventing a possibility of burnt carbon accumulation upon them as is usually the case when batteries or other magnetos are used.

This magneto starts the engine without cranking by first drawing in a charge, turning the flywheel backwards quickly against compression and tripping the magneto with the starting lever.



Websters Tripolar Oscillating Magneto



E-B Type "H" 1 1/2 H. P. Gas Engine Equipped with Sumter Rotating Magneto